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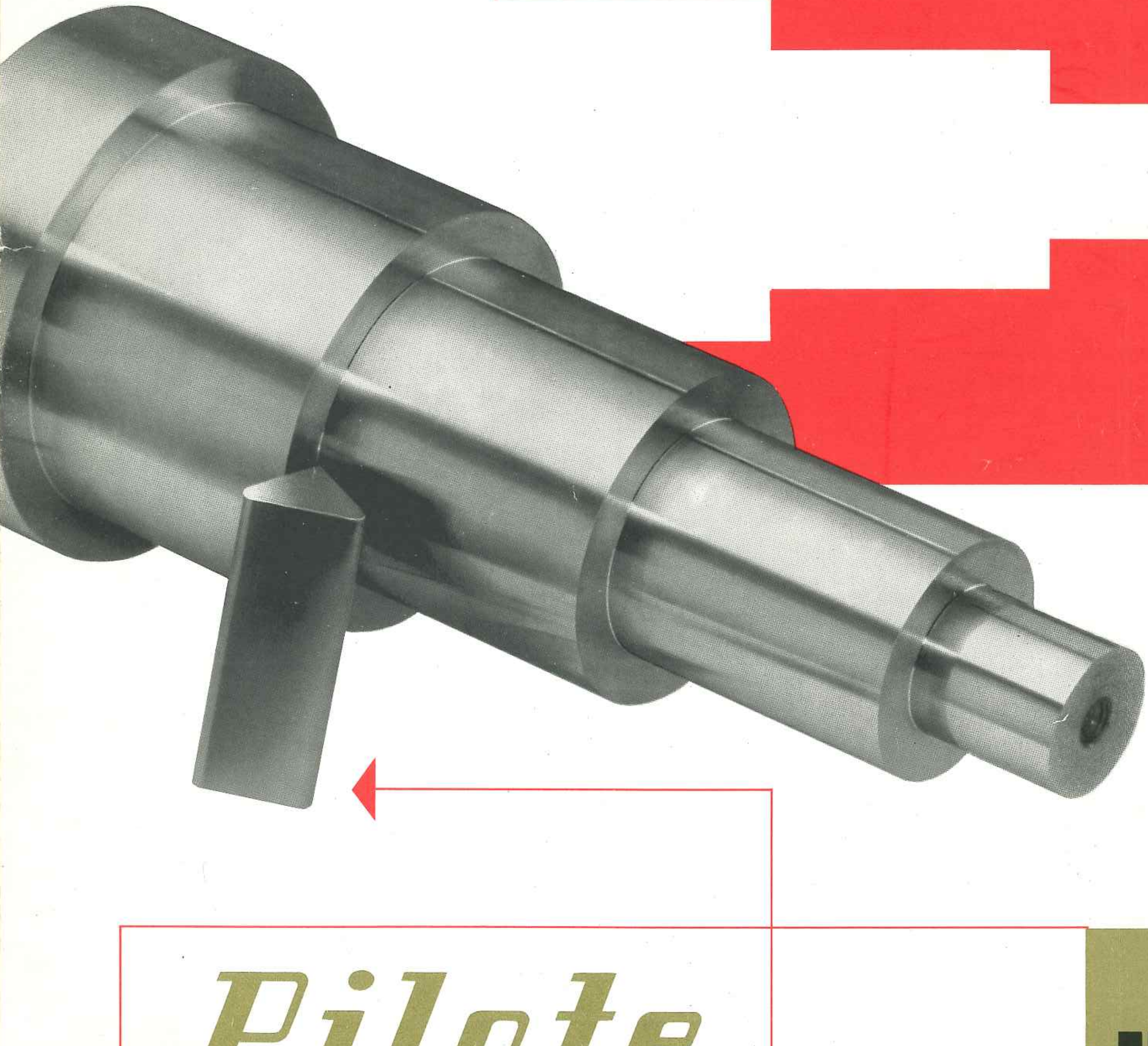
Automatic Cycle Copying Lathe



Pilote

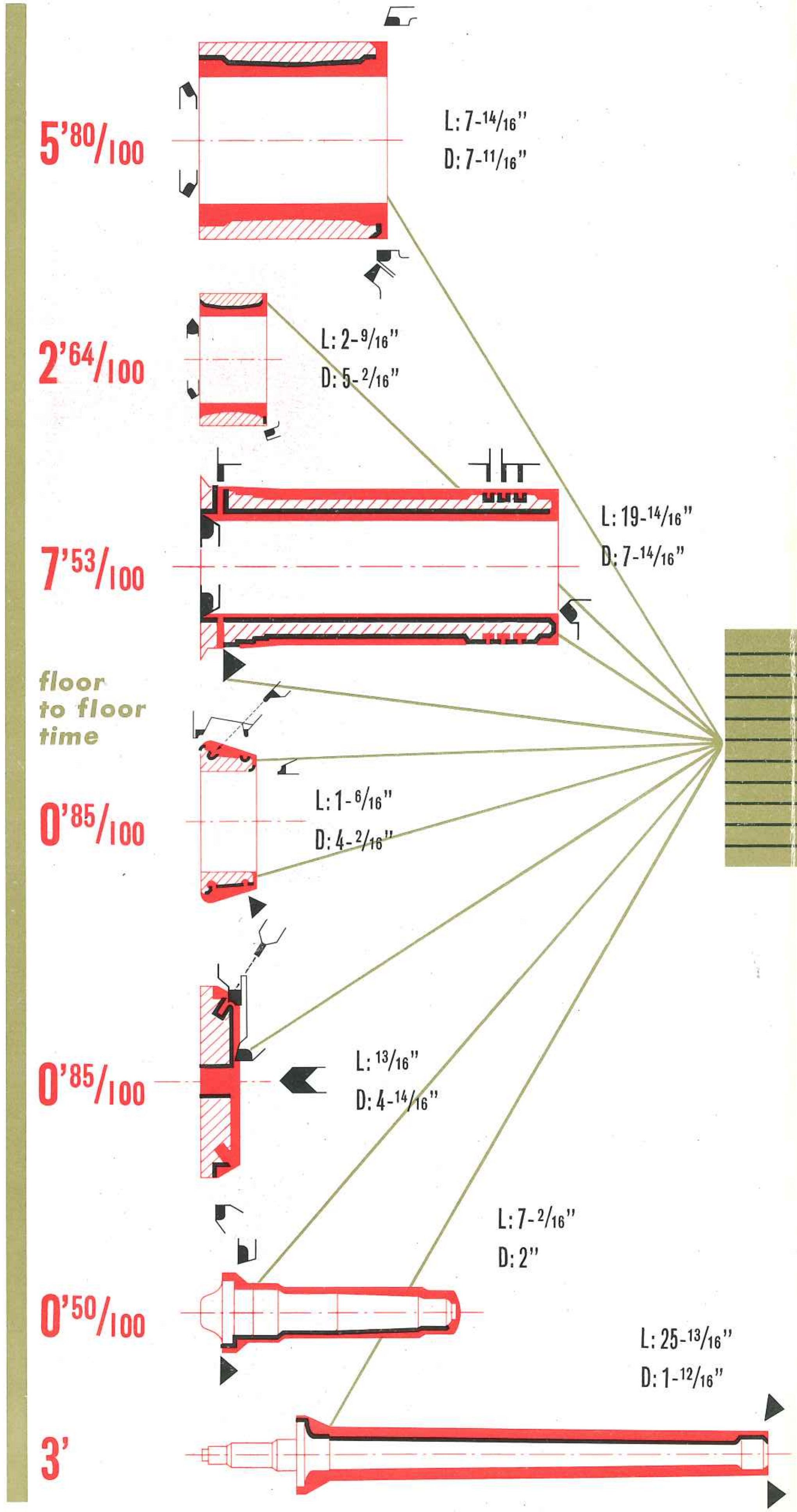
82/11.1

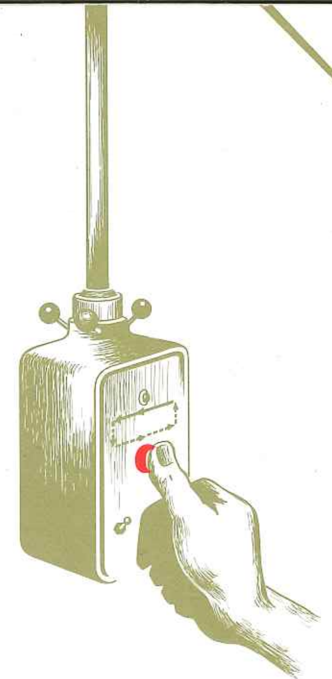
Pilote

The Pilote Automatic Cycle Copying Lathe is a copying lathe designed to operate completely automatically. The operator only presses a button and the tools then cut the appropriate profiles. All he has to do is remove the finished parts and load the machine. The lathe will perform one or more different cycles as determined by the various templets which are brought into position automatically according to the carriage movements.

Because the carriage feed is hydraulic the controls are very simple even when the cycles are complicated. This results in very low set-up time. The feed is accurately regulated by a servo lead-screw and is absolutely independent of the temperature and viscosity of the oil as well as the resistance met by the cutting tools.

The hydraulic copying device is extremely sensitive. The piston movements are determined by a valve which is always open to a greater or lesser extent and therefore has no "dead point". As the hydraulic cylinder is built into the carriage, it is unnecessary to have any compound slide and this obviously contributes greatly to the rigidity of the tool.



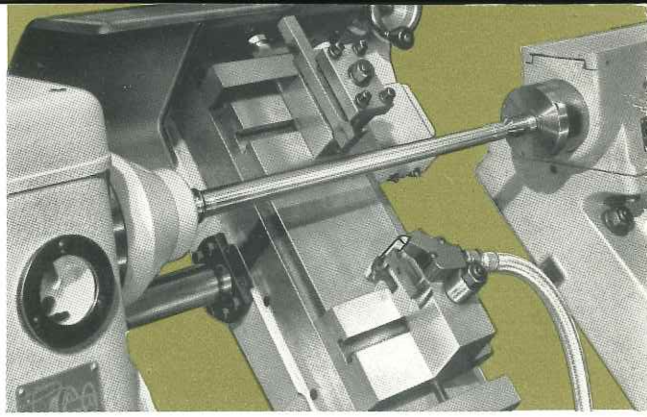


one movement only.

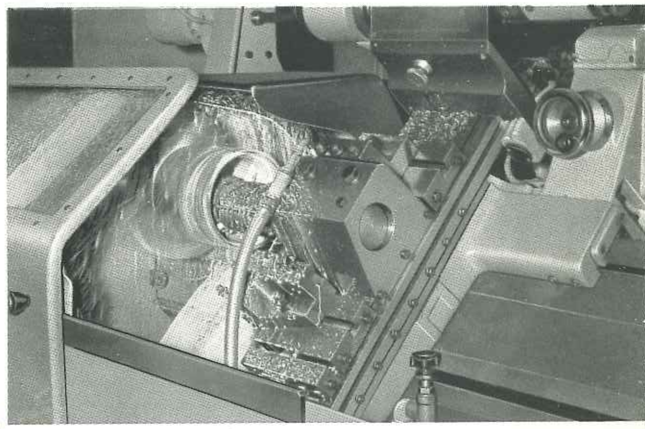
Pilote

the lathe that works all by itself.

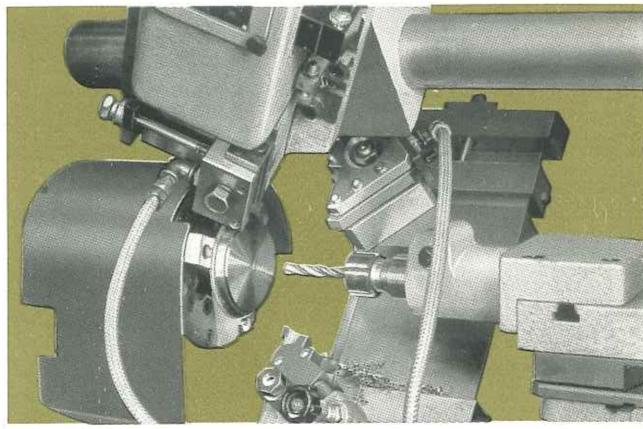
a



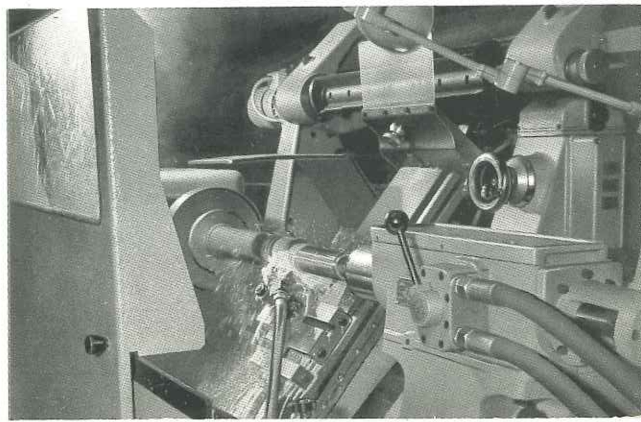
b



c



d

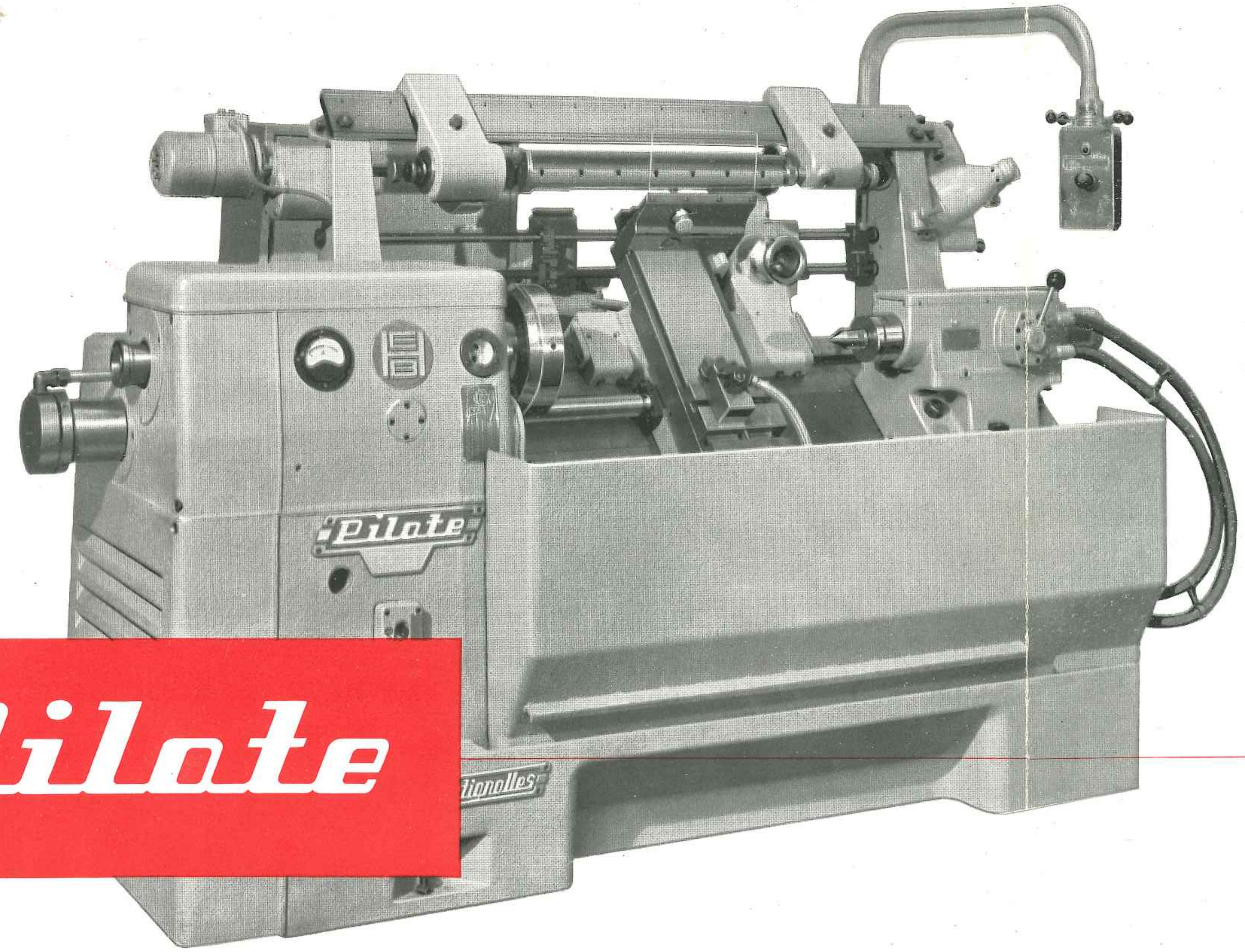


a **accuracy.** The outside of this part is copy-turned by two tools. The second tool takes a very light finishing cut resulting in great accuracy. The automatic reduction of the feed for this finishing cut leaves an excellent finish.

b **rigidity.** Boring these pipe joints, is normally difficult because of the overhang of the boring bar. It is no problem on the Pilote, with its rigid tool-blocks mounted directly on the simple cross-slide. Three cuts are required to remove all the metal, the first two being taken by the roughing tool and the third by the finishing tool.

c **speed.** This part is machined using one drill, one front tool, two back tools and one tool in the vertical tool slide. The drill and the front tools cut simultaneously. Also the vertical tool slide cuts the groove at the same time as the back tools are facing the part. Thus the machining is carried out at great speed.

d **safety.** Turning this spindle becomes a simple operation even for a completely unskilled operator. Any mistake he makes has no serious consequences. If the spindle stops accidentally the servo lead-screws and therefore the tool also stop moving. The hydraulic feed of the vertical slides is also controlled by servo lead-screws, making accidents impossible.

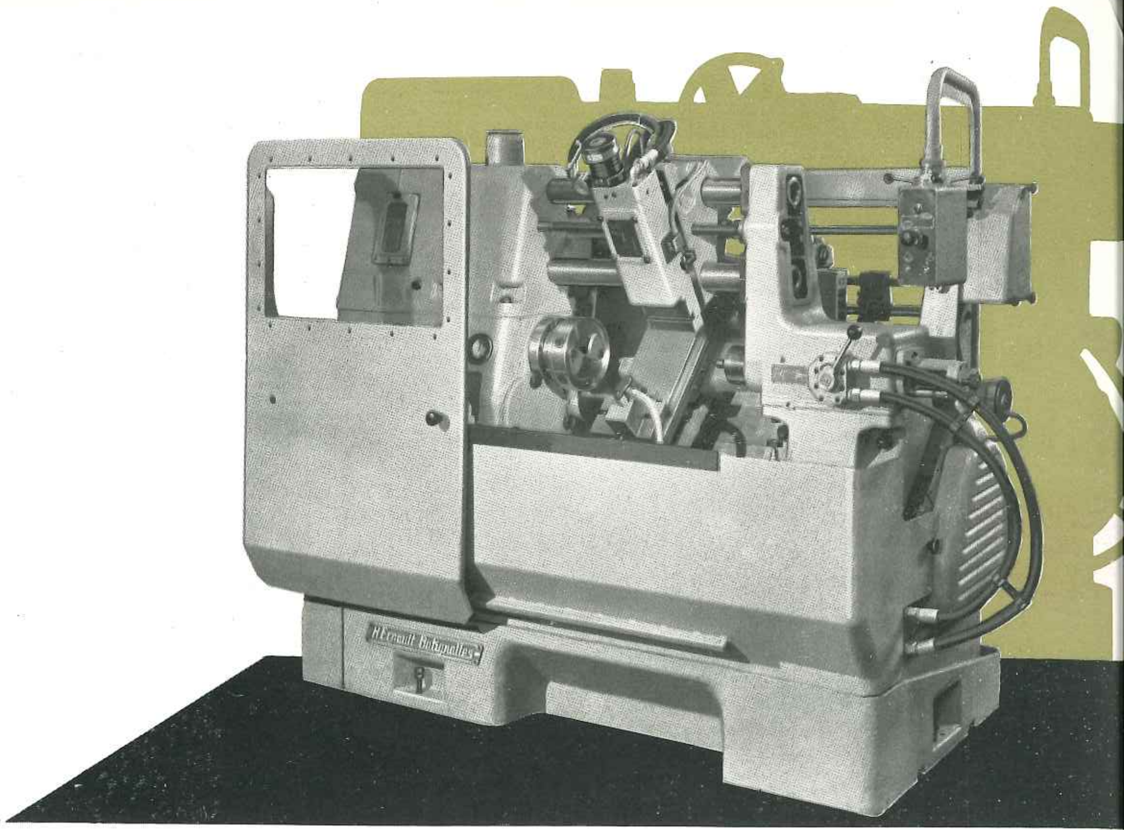


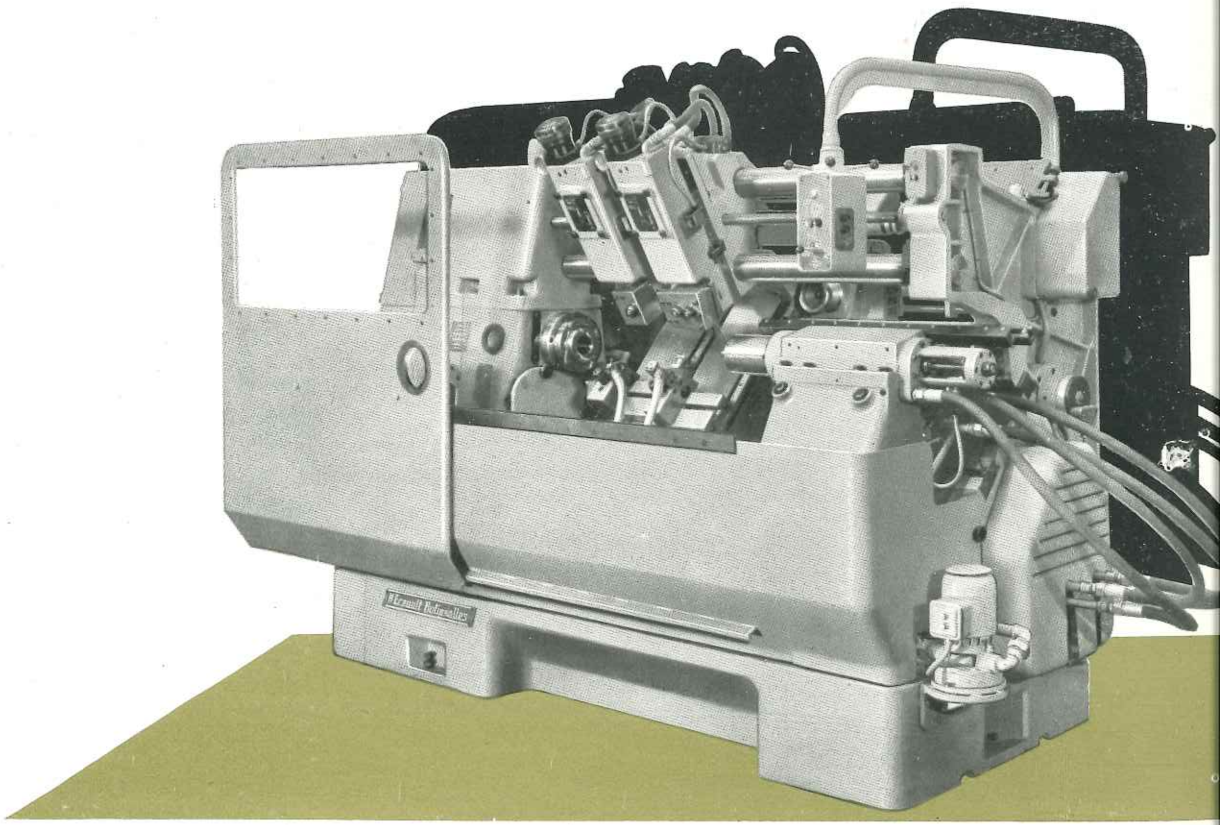
Pilote

the automatic cycle copying lathe

The Pilote can be fitted with one or more vertical tool slides. These operate as part of the automatic cycle and enable undercuts and grooves to be machined without any increase in the machining time.

The Pilote can be supplied with two independent cross slides, each having its own copying device. This results in remarkable machining times by having two tools copy turning the work-piece simultaneously.





specifications

	Pilote 51			Pilote 76		
	Distance between centers	Length of bed	Weight	Distance between centers	Length of bed	Weight
Type DE 450 DE 750	18" 30"	70" 82"	6100 lbs 6600 lbs	18" 30"	70" 82"	8500 lbs 9100 lbs
Main Motor	15 to 25 H.P.			30 to 60 H.P.		
Spindle Speeds	100 to 800 r.p.m. or 380 to 3000 r.p.m.			80 to 400 r.p.m. or 170 to 825 r.p.m.		
Swing over bed	14"			15 3/8"		
Swing over cross slide	7.1/16"			8 1/4"		
Spindle bore	2"			3"		
Spindle nose	Standard American A^1 - 6"			Standard American A^1 - 8"		

the pilote lathe has a one piece casting of triangular cross-section which is both the base and the bed of the machine. The slide-ways are of hardened and ground nitrided steel with a Rockwell hardness of 68 C. They will never show any wear.
Motors of 15 to 25 H.P. are located in the base. Motors of higher power are fixed outside the machine. The drive is transmitted to the spindle through a very simple gearbox having pick-off gears.

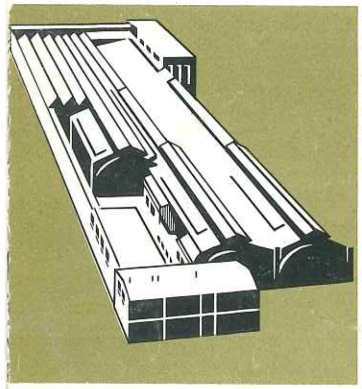
The feed may be automatically increased or decreased at any point in the cycle. The same mechanism operates the quick return motion of the carriage. Other feeds may be obtained by pick-off gears.

The copying tool is mounted tangential to the work and is in compression. This avoids the vibration normally obtained with an overhanging radial tool. Special tool blocks have been designed to use standard solid carbide inserts, which eliminate the cracks associated with brazed tips and reduce tool grinding time.

The back tools are operated hydraulically by simple cams forming part of the pattern holder. The vertical tools are also operated hydraulically by a servo lead-screw of similar design to the carriage feed. The speed of all the tools is therefore accurately controlled resulting in the best tool life.

Various equipment is available for holding the work: automatic chucks, hydraulic and air operated chucks, collet chucks, etc. Fixtures for loading the work without stopping the spindle enable the tailstock to be operated automatically as part of the cycle.

The electrical equipment is mounted in a small separate cabinet and all the items are easily reached when necessary. The coolant system incorporating a large capacity pump results in most efficient cooling.



The H. Ernault-Batignolles, —H.E.B.—lathes are built by the machine tool department of Batignolles-Chatillon. Their three factories situated at Paris, Cholet and Nantes cover an area of 56 acres and employ more than 4000 people. H. Ernault-Batignolles is today one of the largest manufacturers of machine tools in France.

In addition to the Pilote lathe they build the model OP Copying Lathe and the Model GT mold-making lathe. They also build engine lathes having swings of 11" to 20" diameter and center distances of 20" to 100". Thes lathes can be supplied with copying attachments.

H. ERNAULT-BATIGNOLLES

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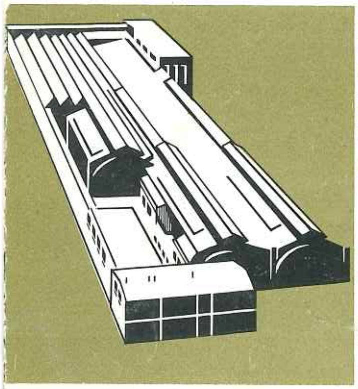

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